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ABSTRACT

This study investigated preservice teachers' perceptions of the teachers' role in the classroom with computers. The following questions were investigated: (1) What are the preservice teachers' perceptions of the teachers' role in the classroom with computers, measured in terms of teacher-centeredness and student-centeredness? (2) What are the preservice teachers' perceptions of computer use once placed in the classroom with computers, measured as teacher-centered computer use and student-centered computer use? and (3) Do the preservice teachers' perceptions of the teachers' role in classrooms with computers differ from their perceptions of computer use in terms of teacher-centeredness and student-centeredness? The findings of the study showed that there was no significant difference between preservice teachers' perceptions of teacher-centered roles and their perceptions of student-centered roles in the classroom with computers. The preservice teachers perceived that they would be likely to engage in teacher-centered activities and student-centered activities on an equal basis while teaching in classrooms with computers. Nevertheless, there was a significant difference between the preservice teachers' perceived teacher-centered computer use and the student-centered computer use. The preservice teachers would be more likely to use the computer as a teacher-centered tool than as a student-centered tool. (Contains 30 references.) (MES)

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Preservice Teachers' Perception of the Teachers' Role in the Classroom with Computers

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Abstract: This study investigated preservice teachers' perceptions of the teachers' role in the classroom with computers. The teachers' role was measured as teacher-centeredness and student-centeredness. The findings of the study showed that there was no significant difference between preservice teachers' perceptions of teacher-centered roles and their perceptions of student-centered roles in the classroom with computers. The preservice teachers perceived that they would likely to engage in teacher-centered activities and student-centered activities on a equal basis while teaching in classrooms with computers. Nevertheless, there was a significant difference between the preservice teachers' perceived teacher-centered computer use and the student-centered computer use. The preservice teachers would more likely to use the computer as a teacher-centered tool than as a student-centered tool.

Literature Review

In response to the challenge of the introduction of computers in educational settings, teacher education started to offer computer training courses to prepare preservice teachers for the successful use of technology in their future teaching practice. "College of education must have program requirements to insure adequate preparation for students to use the computer as a tool in their teaching" (Bitter, 1989; p. 34).

The successful use of technology in teaching practice, however, involves more than mastering computer skills. "Equally important are the beliefs and perceptions about computers in education that these future teachers take from their training" (Byrum & Cashman, 1993; p. 260).

Preservice teachers' beliefs and perceptions play a crucial role in shaping their teaching styles. Therefore, "understanding the belief structures of teachers and teacher candidates is essential to improving their professional preparation and teaching practices" (Pajares, 1992; p. 307). With computers becoming a part of the learning process in classroom settings, it is imperative to investigate preservice teachers' beliefs and perceptions of the teachers' role while teaching in the classroom with computers.

'The teachers' role' has been the major focus of the on-going discussion whether the computer could have an impact upon schools. Numerous reports recounted the failure for technology to bring changes to our educational system. "Computers by themselves did not lead to the restructuring of education" (Riel, 1980; p. 180). There has been an increasing awareness that "teachers' use of technology often forces it into traditional teaching paradigms that have

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existed for decades" (Sprague, 1995; p. 52). To fulfill the potential of technology, there is a need to redefine the teachers' role and change existing teaching practice. "For computers to make a difference in how students experience schooling will require teachers and administrators to modify their concepts of appropriate and inappropriate teaching behaviors, to reprioritize the value of different types of instructional content, and to change habits and assumptions that guide their classroom and school management strategies (Becker, 1991; p. 8).

Teaching with computers requires a shift from the traditional teaching style. Computers changed the arrangement of classrooms (Chin & Hortin, 1993-94), social organization of student learning (Becker, 1985), and interactive patterns between teachers and students (Riel, 1989). Classrooms need to be arranged in a way so that students and teachers could move around for individual and group work. Computers facilitated more independent learning. Students assisted each other completing the learning task and solving problems collaboratively often with their teachers as partners. Students participated in the evaluation process and frequently evaluated each other' work. Teachers worked with individual students and small groups rather than directing the attention to the whole class. (Becker, 1985; Keirns, 1990; Riel, 1989; Sandholtz, 1990). "The direction of their change was toward child-centered rather than curriculum-centered instruction" (Dwyer, 1991; p. 50). The concurrent agreement is that the teachers' role has been shifted from an "information dispenser" to a "coach" (Sheingold & Hadley, 1990); from a "centralized authority" to a "decentralized facilitator" (Chin & Hortin, 1993-94), from a "sage on the stage" to a "guide at the side" (Cifuentes, 1997). "Technology forced a re-evaluation of the authoritative teacher role" (Chin & Hortin, 1993-94; p. 83).

This shift of the teachers' role has been a daunting task on the part of the teacher, which involves frustration and uneasiness at times. "In large part, teachers' uncertainty is based on lack of knowledge, but more significantly, on the fact that using computers will require some changes in the ways they've been teaching" (Preskill, 1988; p. 25). The shift of the teachers' role "brought deeply held beliefs about real schools into conflict with emergent awareness about instruction and learning" (Dwyer, Ringstaff, & Sandholtz, 1991; p. 50). Teachers had to confront their traditional beliefs about teaching and learning. As one teacher acknowledged: "As you work into using the computer in the classroom, you start questioning everything you have done in the past and wonder how you can adapt it to the computer. Then, you start questioning the whole concept of what you originally did" (Dwyer, Ringstaff, & Sandholtz, 1991; p. 50). Even with teachers who are willing to experiment with innovative technology. The change is slow, and sometimes includes temporary regression (Sandholtz, 1990; p. 35).

The discussion of the teachers' role shift has significant implication to teacher education. "The way that teachers teach is a product of their own schooling, training, and experiences as teachers" (Becker, 1991; p.8). It raises a key issue on how teacher education shall prepare preservice teachers for their future role teaching in the classroom with computers. "To realize any vision of smarter schooling by using technology, ...college of education must prepare teachers to use the technology...adequate teacher preparation is probably the most important determinant of success. (Hancock & Betts, 1994; p. 29). The challenge that faces

teacher education is to provide effective instructional technology (IT) training to preservice teachers so that they will develop appropriate teaching styles to function well while teaching with computers.

Up to date, research on preservice teachers in the field of educational computing primarily focused on their computer attitudes and computer competence (Beaver, 1990; Liu, 1990; Overbaugh & Reed, 1992; Reed & Overbaugh, 1993; Reed, Ervin, & Oughton, 1995; Savenye, 1993; Savenye, Davidson & Orr 1992). Nevertheless, it is imperative to investigate the beliefs and perceptions of preservice teachers in terms of the teacher's role in the classroom with computers. "There are good reasons why attempting to understand the beliefs of preservice teachers is essential to teacher education" (Pajares, 1992; p. 328). This study was designed to investigate preservice teachers' perceptions of the teachers' role in the classroom with computers.

The Purpose of the Study

This study investigated the following questions: (1) What are the preservice teachers' perceptions of the teachers' role in the classroom *with* computers? The preservice teachers' perception of the teachers' role is to be measured as teacher-centeredness and student-centeredness. (2) What are the preservice teachers' perceived computer use once placed in the classroom with computers? The preservice teachers' perceived computer use is to be measured as the teacher-centered computer use and the student-centered computer use. (3) Do the preservice teachers' perceptions of the teachers' role in classrooms *with* computers differ from their perceptions of the computer use in terms of teacher-centeredness and student-centeredness?

Method

Sample

This study was conducted at a public university in a territory of the United States in the Pacific Rim. The sample for this study was all the preservice teachers (N=78) who had completed all their course work and were ready for student teaching in the Fall 1999. All the 78 students participated in the survey. Out of 78 questionnaires, four were deemed not usable because of missing items.

Instrument

The data collection instrument for this study was a survey questionnaire adapted from the one originally developed by Bichelmeyer, Reinhart and Monson at the Indiana University to measure teachers' beliefs about the teachers' role teaching with technology (1997). The survey questionnaire contains three sections; (1) demographic information; (2) preservice teachers' perception of the teachers' role in the classroom with computers; (3) preservice teachers' perceived teacher-centered computer use and student-centered computer use.

Section 1 contained six items collecting subjects' personal information: (1) gender; (2) major; (3) birth date; (4) number of years at the university; (5) years of computer experience; (6) grade levels likely to teach.

Section 2 included 12 items on a likert scale (1-5) measuring preservice teachers' perception of the teachers' role in the classroom *with* computers. Six items dealt with teacher-centeredness while the other six items student-centeredness. Teacher-centeredness defined the teachers' role primarily as (1) planning instructional activities for the whole class; (2) being the main directing force in conducting the class; (3) keeping order and quiet in the classroom; (4) presenting lectures; (5) attending the class as a whole; (6) being the main resource in the student learning process. Student-centeredness defined the teachers' role primarily as (1) collaborating with students in planning lesson; (2) providing individualized learning objectives; (3) using authentic assessment methods; (4) evaluating students on individual basis; (5) including students in the evaluation process; (6) creating student sub-groups for class projects.

Section 3 collected data on preservice teachers' perception on how they will use computers specifically if once placed in the classroom with computers. Six items in this section were the teacher-centered computer use and six items were the student-centered computer use. The teacher-centered computer use was defined as teachers using computers to: (1) create instructional materials; (2) find resources; (3) communicate with others; (4) keep track of students' grades; (5) present information to the whole class; (6) provide computer enrichment activity. The student-centered computer use was defined as students using computers to (1) create learning resources; (2) find resources for learning activities; (3) communicate with others; (4) present information; (5) complete class projects; (6) engage in computer hands-on learning activities.

Data Analysis and Results

Data was analyzed by using SPSS (Statistical Package for Social Sciences).

(1) What are preservice teachers' perceptions of the teachers' role in the classroom *with* computers? Paired-sampled *ttest* was used to compare the means of preservice teachers' perceptions of the teacher-centered role and the student-centered role in the classroom with computers. The comparison showed that there was no significant difference ($t=.48$ $p>.05$) between preservice teachers' perceptions of the teacher-centered role ($M=4.1227$ S.D.=.598) and their perceptions of the student-centered role ($M=4.0926$ S.D.=.672).

(2) What are the preservice teachers' perceived computer uses? Means for the preservice teachers' perceived teacher-centered computer use and the student-centered computer use were compared. The comparison showed that there was a significant difference ($t=9.7$ $p<.05$) between preservice teachers' perceived teacher-centered computer uses ($M=4.0137$ S.D.=.677) and their perceived student-centered computer uses ($M=3.3659$ S.D.=.718).

(3) Do preservice teachers' perception of the teachers' role in the classroom with computers differ from their perceptions of the specific computer use? Paired-sampled *t test* was used to compare the means of preservice teachers' perception of teachers' role in classrooms *with* computers and their perceived computer uses. The test showed that preservice teachers' perception of the teacher-centered role did not differ significantly from their perceived teacher-centered computer use ($t=1.05$ $p>.05$). Preservice teachers' perception of the student-centered role differed significantly from their perceived student-centered computer use ($t=6.5$ $p=.000$).

Discussion

There was no significant difference on preservice teachers' perceptions between the teacher-centered role and the student-centered role in the classroom *with* computers, which indicated that these future teachers would likely engage in teacher-centered activities and student-centered activities on an equal basis while teaching in the classroom *with* computers. The preservice teachers did not take an exclusive stance on the teachers' role in the classroom with computers leaning towards the teacher-centered role or the student-centered role. It appeared that the preservice teachers considered that both roles were important and the two roles were complementary rather than exclusive to each other.

However, when tested on their perceived computer use, these preservice teachers shifted to the teacher-centered computer use. The data indicated that these preservice teachers would more likely to use the computer as a teacher-centered tool than a student-centered tool, thus creating a discrepancy between the perception and the practice. This discrepancy might be due to the fact that these preservice teachers became uncertain of the teachers' role in terms of the specific computer use. "Since classroom use of computers ...is still a relatively new idea, preservice teachers do not have many models from which to base their ideas on how to use computers and other technologies in their own classrooms" (Poole & Simonson, 1996; p. 145).

The preservice teachers' perception of the computer use might reflect the IT training they have received in teacher education. Although these preservice teachers have completed university IT courses, their IT training courses might expose them to more teacher-centered computer uses than student-centered computer uses. The student-centered computer use requires different strategies including scheduling the computer use, utilizing different classroom management skills, designing curriculum-related activities, and developing evaluation methods accordingly. These preservice teachers might not be feeling comfortable using the computer as a student-centered tool since it required strategies they had not yet developed.

The findings of this study touched a fundamental issue on IT training in teacher education. For years, teacher education has been wrestling with the issue of what counts for an effective IT training. "The issue now is how to structure the computer experience to prepare teachers to use computers most effectively" (Dugdale, 1994; p. 250). Teacher education have since adopted a variety of IT training models from offering the computer core course to integrating

the computer training into methods courses. Each model contributes to the preparation of preservice teachers' use of technology (Wang, in press).

Nevertheless, "Few courses relate teachers' delivery styles to what types of materials and activities they select and it is even more difficult to find courses that are addressing teaching styles and how they impact the use and misuse of technology" (Flake & Molina, 1995; p. 337). Teaching styles is an neglected component in IT training. IT training courses should explore and foster appropriate teaching styles involving the use of technology and present examples and models of the student-centered computer use. It is helpful to make it explicit the distinction between the teacher-centered computer use and the student-centered computer use. Preservice teachers' perception of the teachers role can be shaped and changed via intervention. Stuhlmann, Taylor, & LaHaye (1995) found that preservice teachers changed their traditional perception of the teachers' role by participating an innovative technology project. One participating student observed: "I have never had a teacher, in all of my grammar and high school, who did not stand up in the front and talk. Ms. LaHaye (the school teacher involved with the project) is the only teacher I have seen that didn't do that. It's wonderful the way she just stands in the back or on the side and watches us work" (p. 275).

Preservice teachers' IT training should be grounded in practice. There is a sizable gap between the university classroom and the real world. Teacher education should make efforts to seek connections with the real world. "Most schools of education offer coursework intended to prepare their graduates for using information technologies. While these courses are having a positive impact on later classroom practice, seeing technology used in a few university courses is insufficient for preparing knowledgeable consumers of technology. Students must have many models of effective technology use" (Hunt, 1995).

Field experience offers such a connection and should be an integrated component of IT training courses. Parkinson (1998) suggested that IT training courses should be taught through university-based component and the school-based component. "It needs to be borne in mind that the influence and importance of the school-based component is beyond dispute..." (p. 69). Students perceived that observation and participation in technology use in real classroom settings played a strong role in preparing them for the computer use in teaching practice (Handler, 1993). Opportunities should be created for students to visit school computer labs, observe computer use in real classroom situations and collaborate with classroom teachers to implement ideas of integrating the computer into the curriculum. Dugdale (1994) described a successful computer course incorporating field experiences. Students were required to design curriculum unit integrating the computer and implement their projects in the real classroom setting. Both students and practicing teachers considered the experience worthwhile and valuable.

Conclusion

This research provides baseline data on preservice teachers' perception of the teachers' role in the classroom in the Information Age. Teachers often teach the way they were taught. The goal of teacher education is not simply to produce graduates to fill up the pool of the teaching profession, but to produce qualified graduates who can make an impact on the extant educational system. Teacher education needs to restructure IT courses, exposing preservice teachers to innovative models of using technology and grounding IT training in practice so that the future teachers can be equipped with appropriate teaching styles to function effectively in the classroom with computers. "Our challenge is to provide a clear vision of how computers and technology can transform classroom instruction" (Wetzel, 1993; p. 335).

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